

NAME \_\_\_\_\_

Wkst #2.2

PERIOD \_\_\_\_\_ DATE \_\_\_\_\_

THE ROLE OF  $a$  IN  $y = ax^2 + bx + c$ 

Classify the graph of each function as opening upward or downward.

1)  $y = 5x^2$  \_\_\_\_\_

4)  $y = -2x^2$  \_\_\_\_\_

2)  $y = \frac{1}{3}x^2$  \_\_\_\_\_

5)  $f(x) = 10x^2$  \_\_\_\_\_

3)  $y = -\frac{1}{2}x^2$  \_\_\_\_\_

6)  $f(x) = -1.5x^2$  \_\_\_\_\_

Determine which of the three functions has the narrowest graph. Circle your answer.

7)  $y = x^2$

$y = 3x^2$

$y = \frac{1}{3}x^2$

8)  $y = -x^2$

$y = -5x^2$

$y = -\frac{1}{5}x^2$

9)  $y = x^2$

$y = 4x^2$

$y = -6x^2$

10)  $y = -\frac{3}{4}x^2$

$y = \frac{1}{2}x^2$

$y = -\frac{3}{8}x^2$

Arrange the following functions in order of the steepness of their graphs beginning with the least steep.

a)  $f_1(x) = 3x^2$

b)  $f_2(x) = 24x^2$

c)  $f_3(x) = -.5x^2$

d)  $f_4(x) = -2x^2$

e)  $f_5(x) = .25x^2$

f)  $f_6(x) = -x^2$

Answer: \_\_\_\_\_

For what values of " $a$ " will the graph of  $y = ax^2$  have a maximum value? \_\_\_\_\_

NAME S.

PERIOD \_\_\_\_\_ DATE \_\_\_\_\_

### THE ROLE OF $c$ IN $y = ax^2 + bx + c$

Determine the y-intercept of the following graphs.

- 1)  $y = x^2 + 7x - 4$  \_\_\_\_\_
- 2)  $y = 5x^2$  \_\_\_\_\_
- 3)  $y = -3x^2 + 2x + 8$  \_\_\_\_\_
- 4)  $y = x^2 + 2x$  \_\_\_\_\_

The graph of each of the following functions is a parabola.

$$f_1(x) = 2x^2$$

$$f_2(x) = -3x^2 + 1$$

$$f_3(x) = .5x^2$$

$$f_4(x) = -2x^2 - 1$$

$$f_5(x) = 2x^2 + 6$$

$$f_6(x) = 3x^2 + 4$$

- 5) Which parabolas are congruent? \_\_\_\_\_
- 6) Which parabolas open in the same direction?  
upward: \_\_\_\_\_ Downward: \_\_\_\_\_
- 7) The vertex of  $f_1$  is  $(0,0)$ .
  - a) What transformation gives  $f_5$ ? \_\_\_\_\_
  - b) What is the vertex of  $f_5$ ? \_\_\_\_\_
- 8) The vertex of  $y = -2x^2$  is  $(0,0)$ .
  - a) What transformation gives  $f_4$ ? \_\_\_\_\_
  - b) What is the vertex of  $f_4$ ? \_\_\_\_\_

Two parabolas are defined by  $y = 2x^2$  and  $y = -2x^2 + 3$

- 9) How are their graphs alike? \_\_\_\_\_
- 10) How are their graphs different? \_\_\_\_\_